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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,514	07/28/2003	Masuhiko Natsuhara	39.020-AG	1513

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JUDGE PATENT FIRM  
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3-1 WAKAMATSU-CHO  
NISHINOMIYA-SHI, HYOGO, 662-0035  
JAPAN

EXAMINER
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KACKAR, RAM N

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 12/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/604,514

Applicant(s)

NATSUHARA ET AL.

Examiner

Ram N. Kackar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>none</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shamouilian et al (US 6494958) in view of Heimann et al (US 6620707).**

Shamouilian et al disclose a wafer holder for a semiconductor manufacturing equipment (Fig 1-210) having a surface for carrying wafers and an electrical circuitry (electrode) formed inside (Fig 1-220 or 230), the electrical circuitry having porosity (large range of mesh size of 5-200 - Col 9 lines 42-46) and comprising silver, molybdenum, tantalum, tungsten or platinum (Col 9 lines 33-38). The electrode could be an RF electrode (Col 5 lines 48-50) or an electrostatic chuck (Col 4 lines 35-37). The wafer holder including the electrode could be made by sintering (Col 7 lines 9-14).

Shamouilian et al teach that due to voids or interstices between the wires (pores) the mesh is subject to less thermal expansion. It is therefore obvious that adjustment of mesh size could allow adjustment of thermal expansion and the integrity of the wafer holder through large number of cycles of expansion and contraction.

Regarding the limitation of porosity being greater than 0.1% (since 0.1% porosity is a very low porosity, almost any porosity will read on the claim.) it is obvious that the mesh size could control the porosity of the electrode to any percentage needed.

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The recitation of the electrode being a sinter laminae is a product by process limitation.

However, sintered electrode of platinum for heating is disclosed by Heimann et al (Col 1 lines 48-57). Heimann et al teach that electrodes are usually manufactured by sintering (Col 1 lines 30-32) and disclose the pros and cons of low porosity vs high porosity and recommends suitable sintering temperature for porosity required.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to make the electrode as sintered as an alternative and art recognized equivalent to porous mesh as taught by Shamouilian et al and Heimann et al.

**3. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shamouilian et al (US 6494958) in view of Munshi et al (US 5654030).**

Shamouilian et al is discussed above.

Regarding the porosity of sintered electrode, Munshi et al disclose porous electrode made by sintering fibers of platinum (Col 6 16-36) and disclose porosity of even 70% or higher.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to make the electrode as sintered as an alternative and art recognized equivalent to porous mesh according to the teachings of Shamouilian et al and Munshi et al.

**4. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niori et al (US 6197246) in view of Heimann et al (US 6620707).**

Niori et al disclose a wafer holder for a semiconductor manufacturing equipment (Fig 7-41) having a surface for carrying wafers and an electrical circuitry (electrode) formed inside

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(30), the electrical circuitry having porosity (mesh size) and comprising molybdenum, tantalum, tungsten or platinum (Col 10 lines 57 to Col 11-line8). The electrode could be an RF electrode (Fig 7). Niori et al further teach that the electrode of wire mesh or plate like with numerous holes (porous) the thermal stress is dispersed (Col 10 lines 65-67).

Regarding the porosity the mesh size could control the porosity to a required degree.

As discussed above, Heimann et al (Col 1 lines 48-57) teach that electrodes are usually manufactured by sintering (Col 1 lines 30-32) and disclose the pros and cons of low porosity vs. high porosity and recommends suitable sintering temperature for porosity required.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to make the electrode as sintered as an alternative and art recognized equivalent to porous mesh according to the teachings of Niori et al and Heimann et al.

**5. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niori et al (US 6197246) in view of Munshi et al (US 5654030).**

Niori et al is discussed above.

As discussed above, Munshi et al disclose porous electrode made by sintering fibers of platinum (Col 6 16-36) and disclose porosity of even 70% or higher.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to make the electrode as sintered as an alternative and art recognized equivalent to porous mesh according to the teachings of Niori et al and Munshi et al.

***Response to Arguments***

Applicant's arguments filed 9/29/2005 have been fully considered but they are not persuasive.

Applicant argues against the combination of references used as in the rejection above, but fails to specify where any deficiency exists.

As discussed above, both Shamouilian et al and Niori et al teach electrodes with porosity and teach their advantages. Both Heimann et al and Munshi et al teach that porous electrodes made by sintering were known in the art and further discuss pros and cons of the magnitude of porosity.

Applicant further argues that Heimann et al and Munshi et al are non-analogous art.

It is held by courts that art is analogous when it solves the same problem as applicant. *In re Melin* 165 USPQ 168 (CCPA 1970). Further art may be outside applicant's field of endeavor and still be analogous if both fields share the same common problem. *In re Nilssen* 7 USPQ 2d 1500 (Fed. Cir. 1988). In this instance both teach, porous electrodes for conducting electricity made by sintering.

Applicant further argues that Heimann et al teach away from the instant invention.

What applicant is referring as "teaching away" is really a discussion of the pros and cons of low or higher porosity. It is further noted here that the claim's porosity of more than 0.1% really claims any porosity (0-100) since 0.1 % porosity is almost no porosity.

Applicant argues that Shamouilian et al teach two-dimensional voids and interstices. This is not persuasive since two-dimensional structures are only theoretical concepts not seen in

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reality. Further Shamouilian et al disclose a length and circular elliptical or rectangular cross section of mesh (Col 9 line 45-46).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

3. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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4. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ram Kackar  
Examiner AU 1763